

FACTORS RESPONSIBLE FOR THE ADOPTION OF SCIENTIFIC TECHNOLOGICAL PRACTICES (STPs)

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ABSTRACT

Present study was conducted in twelve villages of three districts namely, Jammu, Kathua and Udhampur of J&K State. A sample of 240 respondents was gathered through simple random sampling technique. Ten independent variables namely knowledge, family education, source of information utilized, age, social participation, socio economic status, experience, no. of animals owned by the farmers, farm size and family size were identified through pilot study of the area and review of literature. For measuring these variables already available scales were adopted and wherever the tools were not available the same were constructed. The findings indicated that independent variables knowledge, experience in farming, socio-economic status, family education, social participation, sources of information and farm size were positively and significantly associated with the adoption of Scientific Technological Practices (STPs) of agriculture by the farmers. While the remaining independent variables age, number of animals owned and family size were not significantly contributed with the adoption of Scientific Technological Practices (STPs).

Key words : Scientific practice, Technological practice, Adoption, Independent variables.

INTRODUCTION

Advances in the science have considerably changed the pattern and quality of human life. Almost every aspect of human living has been influenced by the advents, inventions and innovations attained through modern scientific researches. Agriculture, one of the most important human activities since the beginning of civilization, has also progressed with the support of scientific investigation pertaining to crop improvement, production, protection, crop nutrition, weed management and water stress tolerance. Farmers have a lot of knowledge about agricultural technologies but they choose only those, which are profitable from their viewpoint. The farmers of the Jammu and Kashmir state increased their

production through adoption of latest agricultural technologies. Moreover, certain area of the state emerged as agriculture hub for example, R.S.Pura block of Jammu district famous for basmati rice production, Marh block for vegetable production, Cheanni block of Udhampur district and Assar block of Doda district known for vegetable production. The state has diverse agro climatic conditions ranging from sub-tropical to temperate and the altitude range from 215-7012 meters above Mean Sea Level. The crops grown and cropping practices followed in these areas entirely depend up on unpredictable rainfall, which is often erratic and results in wide fluctuations in production. The state also offers ample scope for the development of dry land/rainfed areas for the production of food crops,

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pulses, and grassland and fodder resources. The rainfed area not only make important contribution to natural food output but also sustains the livestock which are reared for wool, meat, egg and milk production.

MATERIAL AND METHODS

The state of Jammu & Kashmir comprising extreme western sector of Himalayas occupies almost a central position in the continent of Asia. Presently, the state of Jammu and Kashmir has 426 thousand hectare of land as rainfed which constitutes about 52 per cent of the gross cropped area. The present study was conducted in three districts *viz.*, Jammu, Kathua and Udhampur of Jammu and Kashmir State. Two tehsils were selected randomly from the selected districts. Out of each selected tehsil, two revenue village were selected by simple random sampling technique. From each selected village, 20 farmers were selected, thus forming a sample of 240 respondents. Ten independent variables namely knowledge, family education, source of information utilized, age, social participation, socio economic status, experience, no. of animals owned by the farmers, farm size and family size were identified as the important variables which might affect the adoption. These variables were identified on the basis of a pilot study conducted in the area under investigation and review of literature. For measuring these variables such as Socio economic status and source of information utilized already available scales namely G Trivedi 1963 and Ram Chandran, 1974 were adopted, respectively and wherever the tools were not available the same were constructed for the study purpose.

RESULT AND DISCUSSION

The extent of association between adoption of Scientific Technological Practices (STPs) by farmers and selected independent variables *viz.*, knowledge, age, experience, socio-economic status, number of animals owned, family education, social participation, sources of information, farm size and family size. For this purpose 'zero-order correlation'

that is 'r' values were calculated. The results are presented in Table -1.

It was observed from the data that knowledge, experience in farming, socio-economic status, family education, social participation, sources of information and farm size were positively and significantly related with the adoption of Scientific Technological Practices (STPs) of agriculture by the farmers at 1 per cent level of probability. On the other hand, the remaining independent variables that age, number of animals owned and family size were not significantly related with the adoption of Scientific Technological Practices by the farmers. Therefore, it gave rise to the interpretation that these variables did not make any significant effect on the adoption of the Scientific Technological Practices by the farmers.

Knowledge and adoption : Knowledge level of farmers was significantly and positively correlated with overall extent of adoption of Scientific Technological Practices of agriculture. This may probably be due to the fact that knowledge is a pre-requisite for adoption of Scientific Technological Practices. A farmer may not be motivated for adoption of any technology unless he gains

Table 1 : Association between independent variables and the adoption.

| N = 240 | |
|------------------------|-----------------------------------|
| Independent Variables | Zero order correlation 'r' values |
| Knowledge | 0.7541** |
| Age | 0.013 |
| Experience | 0.5967** |
| Socio- Economic Status | 0.5101** |
| Number of animal owned | 0.101 |
| Family Education | 0.5309** |
| Social participation | 0.2179** |
| Source of information | 0.7642** |
| Farm size | 0.6460** |
| Family Size | 0.0998 |

** Significant at 1% level of probability.

knowledge about that technology. This finding was in conformity with that of Sharma (1983) and Bhatti and Sharma (2003).

Age and adoption : Age was not significantly associated with the extent of adoption by the farmers. This indicates that age of farmers was not an important variable for the adoption of scientific technological practices. The present finding was in line with the findings of Samrit *et al.* (1991).

Experience in farming and adoption : It was observed that experience in farming was significantly and positively associated with the extent of adoption of Scientific Technological Practices by the farmers. This might be because of the fact that experienced farmers compare the benefits of practices with existing one. An experienced farmer can very well judge the pros and cons of innovations. The finding related to this aspect was supported by the studies of Sharma (1997) and Sharma (2000).

Socio-Economic Status and adoption : Socio-economic status was significantly and positively associated with overall extent of a adoption of STPs by the farmers. It means that higher the socio-economic status, more will be the adoption of STPs. This is a fact that resourceful and economically sound farmers are inclined to adopt more productive and responsive technologies of agriculture. These farmers are able to purchase necessary inputs, which are required for adoption of Scientific Technological Practices *viz.* seed, fertilizers, irrigation etc. The present finding related to this aspect was in line with the findings of Chandure (1973), Satpal (1999) and Singh (1999).

Number of animals owned by farmers and adoption : Number of animals owned by farmers was found non-significantly correlated with the adoption of scientific technological practices. It means that number of animals did not have any affect on adoption of scientific technological practices of important crops. This probably due to the reason that STK based farmers are using mechanical power for agricultural operations. These farmers attached more attention to the high energy

inputs. The finding was in conformity with the findings of Sharma (2000).

Family education and adoption : Family education was significantly and positively related with adoption of STPs of important crops by the farmers. This seems to be logical because education gives shape and direction to the thinking process of the individuals; hence, significant influence of family education on the adoption behaviour of farmers is justified. The finding related to this aspect were in agreement with the findings of Narwal (1982), Nandi (1993) and Sharma (1997).

Social participation and adoption : Farmer's degree of participation in social activities was found significantly and positively related with the adoption. It leads to the conclusion that social participation was one of the factors, which inspired the farmers for adoption of newer technologies. This might be due to the fact that social participation provided an opportunity to the farmers to widen their scope of interactions. These interactions might have helped the farmers in understanding new innovations and strengthen the already established opinion/notion about scientific technological practices. The findings regarding this aspect were in conformity with that of Narwal *et al* (1991) and Patwa (1993).

Sources of information utilized and adoption : Sources of information utilized by the farmers were found significantly and positively related with the extent of adoption. The results seemed to be quite logical because knowledge about new technology was pre-requisite for adoption. Many scientists have also claimed that knowledge of innovation was the first step of adoption process. Pathani (1973) and Laharia (1978) reported that source of information utilized and level of information utilized and level of adoption have significant relationship.

Farm size and adoption : A significant and positive relationship was observed between farm size and adoption. It means that the bigger the farm size the more will be the adoption of scientific technological practices. The finding seems to be

Table 2 : Multiple regression with selected independent variables associated to adoption of Scientific Technological knowledge of agriculture by the farmers.

N = 240

| Independent variables | b-value(R Cof.) | S-error | t- value |
|------------------------|-----------------|---------|----------|
| Knowledge | 0.7610 | 0.0962 | 1.3423 |
| Age | 0.13 | .122 | .202 |
| Experience | 0.0192 | 0.1102 | 2.8134** |
| Socio- Economic Status | 0.3234 | 0.3872 | 0.4781 |
| Number of animal owned | 0.89 | 1.122 | 1.358 |
| Family Education | 0.5247 | 0.6231 | 3.3234** |
| Social participation | 0.5166 | 1.5321 | 0.7934 |
| Source of information | 0.7976 | 0.0872 | 5.6317** |
| Farm size | 0.4002 | 0.5467 | 1.3456 |
| Family Size | 0.3121 | 1.0198 | 0.3245 |

**Significant at 1% level of probability.

$R^2 = 0.7424$

F value = 38.924**

(With 9 and 230 d.f.)

logical because of the fact that the farmers having bigger size of farms were resourceful and had better resources for the adoption of scientific technological practices. The finding in this aspect was found in conformity with the findings of Supe *et al.* (1990), Samrit *et al.* (1991), Thakor (1994), and Rathore *et al.* (2003).

Family size and adoption : Family size was non-significantly related to the overall adoption of STPs by the farmers. It means the size of family was not an important factor for the adoption of scientific technological practices. The probable reason for this may be that although farming was such business in which all the family members contributed but the decision power was vested in the head of family. All the decisions in farming governed by head of the family. Hence, it could not emerge as an important factor in influencing the adoption. This finding was in agreement with the study of Sharma (2000).

Multiple regression equation with the selected independent variables associated to adoption of Scientific Technological Practices (STPs) by the farmers : Multiple regression technique was used to determine the individual and overall influence of selected independent variables on the adoption of Scientific

Technological Practices of agriculture by the farmers. All the selected independent variables were put with adoption of Scientific Technological Practices in the multiple regression equation. The findings have been incorporated in Table -2

Data in Table -2 indicated that there was 74.24 per cent contribution of all the ten independent variables on the adoption of Scientific Technological Practices of agriculture by the farmers. The respective 'F' value was 38.924 at 9 and 230 degree of freedom, which was significant at 0.01 level of probability. Thus, the results implied that all the 10 selected factors had accounted for a significant variation in adoption of Scientific Technological Practices of agriculture by farmers.

Further, test of significance ('t' value) indicates that the coefficient of regression (b-value) was found to be positively and significantly related with level of Experience in farming (X_3), Family Education (X_6) and Sources of Information utilized (X_8) at 1 per cent level of significance. The table also depicts that regression coefficient was non-significant for knowledge (X_1), age (X_2), social economic status (X_4) number of animals (X_5), social participation (X_7), farm size (X_9) and family size (X_{10}). The depth analysis of the relationship between

dependent and independent variables portrays that experience, family education and sources of information utilized were the most important variables among all ten variables selected in the study area whose contribution was maximum for increasing the adoption of Scientific Technological Practices of agriculture among the farmers. It might also be said that these variables were the predictors of adoption of Scientific Technological Practices of agriculture.

CONCLUSION

It can be concluded from the above investigation that the correlation of selected characteristics like knowledge, experience in farming, socio-economic status, family education, social participation, sources of information and farm size were positively and significantly associated with the adoption of Scientific Technological Practices (STPs). While other variable like age, number of animals owned and family size were not significantly related with the adoption.

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